R-Stage+D / Instruction Manual for Cylinder Set

Exclusively for our R-Stage+D

For exclusive use in motorcycles equipped with a CD90 engine with frame Nos from HA03-1100005 onwards

Item Nos：**０１－０４－７００１** (105cc)

・Thank you for purchasing one of our TAKEGAWA's products.
・This is a piston and cylinder set exclusively for R-Stage+D of our own manufacture. In using this set, please strictly observe the following.

◎ **Please note that the descriptions in this manual like illustrations and photos may differ from the actual hardware.**

Please read the following instructions before installation.

◎ We do not take any responsibility for any accident or damage whatsoever arising from the use of the products not in conformity with the instructions in the manual.
◎ We shall be held free from any kind of warranty whatsoever of products other than this product if the glitch takes place on the other products than this one after the installation and use of this product.
◎ This set is exclusively for R-Stage+D of our TAKEGAWA's manufacture.
◎ Please be informed that we shall be held harmless against any claim against us whatsoever arising out of use of the products in racing and the like.

⚠ Caution	The following show the envisioned possibility of injuries to human bodies or property damages as a result of disregarding the following cautions.

・Since this kit is designed and developed for driving in closed races, do not use the kit for running on public roads.
・Work only when the engine and the muffler are cool. (Otherwise, you will burn yourself.)
・Prepare right tools for the work, and do the work in the proper and right way.(Otherwise, improper work could cause breakage of parts or injuries to yourself.)
・As some products and frames have sharp-pointed or protruding portions, please work with greatest care. (Otherwise, you will suffer injuries.)

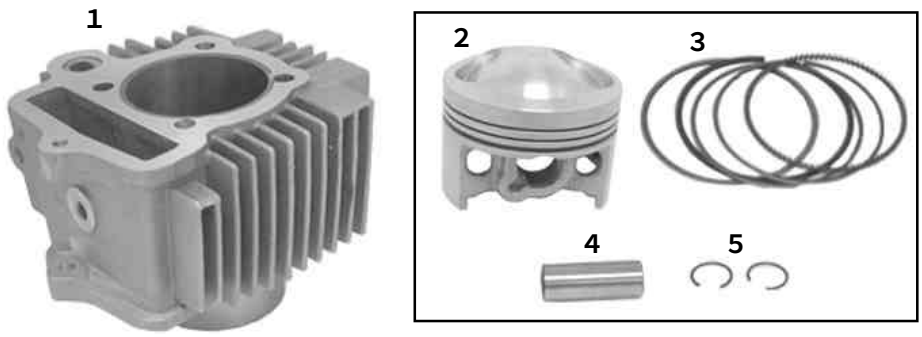
⚠ Warning	The following show the envisioned possibility of human death or serious injuries to human bodies as a result of disregarding the following cautions.

・Those who are technically unskilled or inexperienced are required not to do the work. (Improper installation due to unskilled technique or lack of knowledge could lead to parts breakage and consequently to accidents.)
・Always use new piston pin circlips, gaskets and packing. (Wear and damage to these parts are likely to cause parts breakage and accidents.)
・Before doing work, place the motorcycle on level ground to stablize the position of your motorcycle for safety's sake. (Otherwise, your motorcycle could overturn and injure you while you are working.)
・If you find damaged parts when checking and performing maintenance of your motorcycle, do not use these parts any longer, and replace them with new ones. The continued use of these damaged parts as they are could lead to accidents.)
・Always start the engine in a well-ventilated place, and do not start it in an airtight place. (Otherwise, you will suffer from carbon monoxide poisoning.)
・Before riding, always check every section for slack in parts like screws. If you find slack ones, screw them up securely to the specified torque. (Or improper torque may cause parts to come off, leading to accidents.)
・When you notice something abnormal with your motorcycle while riding down a road, immediately stop riding and park your motorcyle in a safe place. (Otherwise, the abnormaility could lead to accidents.)
・As gasoline is highly flammable, never place it close to fire. Make sure that nothing flammable is near the gasoline. (Otherwise, there will be a danger of causing fires.)
・Check or perform maintenance of parts correctly according to the procedures in the instruction manual or a service manual. (Improper checking or maintenance could lead to an accident.)
・Never use any other part than the specified parts. (Otherwise, there is a possibility of parts breakage, leading to accidents.)
・Always use a torque wrench to screw bolts and nuts tight and securely to the specified torque. (Otherwise, improper torque may result in the breakage or coming off of the bolts and nuts, leading to accidents.)
・As the accumulation of vaporized gasoline is at the high risk of explosion, work in a well-ventilated place.
・Always use high-octane gasoline. (Otherwise, troubles such as engine knocking may cause accidents.)

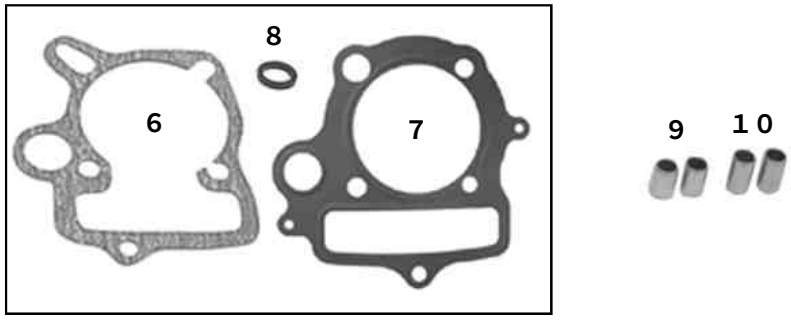
◎ Please be informed that the product specifications, design and prices are subject to change without prior notice.
◎ We shall be held free from any guarantee whatsoever of any trouble caused by the combined use of our products with parts not specified by us.
◎ This manual should be retained for future reference.

～Kit Contents～

01-02-7001 : Piston kit



01-13-7003V : Gasket kit, B set



No.	Parts Name	Qty	Repair parts No.	In packs of
1	Cylinder	1	12101-2HL-T00	1
2	Piston	1	13101-CDR-T00	1
3	Piston ring set (top, 2nd, oil)	1	01-15-014	1
4	Piston pin	1	00-01-0091 (with two circlips)	1set
5	Piston pin circlip	2	00-01-0003	6
6	Cylinder head gasket	1	12251-GFL-T10	1
7	Cylinder gasket	1	00-01-0067	2
8	Rubber packing (black)	2	00-01-0066	2
9	Dowel pin, 8x12	2	00-01-0090	2
10	Dowel pin, 8x14	2		2

※Please note that in ordering repair parts, be sure to quote the Repair Part Item No.
Otherwise, we may not be able to accept your orders.
There are some parts, however, for which we are not in a position to accept your order in just the quantity to be used. In this case, please take them in the quantity packed.

SPECIAL PARTS TAKEGAWA Co.,Ltd.
3-5-16 Nishikiorihigashi Tondabayashi Osaka Japan
TEL : 81-721-25-1357 FAX : 81-721-24-5059
URL : http://www.takegawa.co.jp

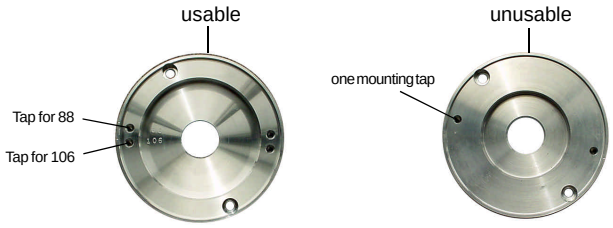
～Installation Procedures～

⚠ **Caution: Always be sure to tighten parts to the specified torque using a torque wrench.**

⚠ **Notice: The unskilled or those without proper knowledge are requested not to do the installation work.**

○The following show the products of our own make to which this kit cannot be installed.

◇On the use of an old-type inner rotar CDI



○Some products involve detachment and installation of an engine and sepration of a crank case, etc. Do the installation work infallibly, following Honda's genuine parts service manual.

○Referring to the service manual, detach the engine from the frame and disassemble it.

○ The crankcase requires processing. Process the crankcase referring to the attached sheet.

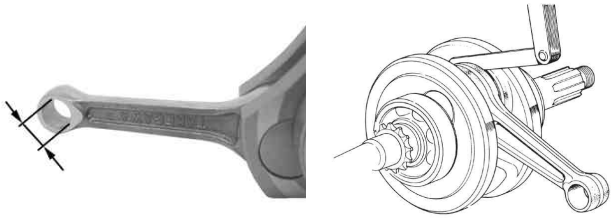
o Check every part.

⚠Caution: Infallibly inspect every part and check consumable parts for damage and wear.

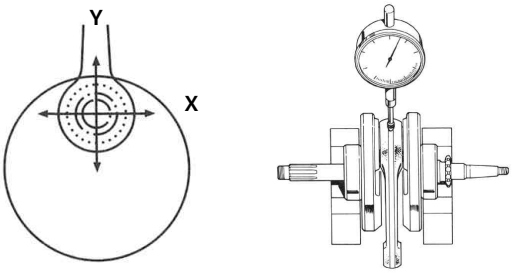
What to check:

• Measure the internal diameter at the small end of the con'rod.
∴ If larger than 13.03 mm, replace it.

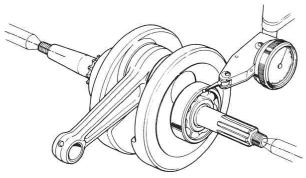
•Measure the clearance at the big end of the con'rod in the axial direction.
∴ If larger than 0.6mm, replace it.



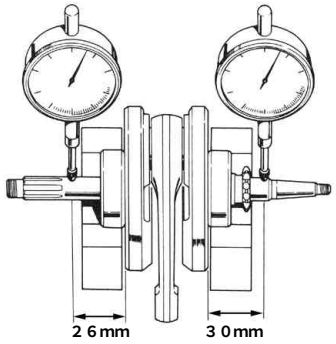
• Measure the misalignment at two points at the big end of the con'rod at right angles to the shaft as shown in the figure on the right.
∴ If larger than 0.05mm, replace it.



• Measure the misalignment on the journal bearing of the crank shaft.
∴ Shaft direction:If larger than 0.10 mm, replace it.
Bearing direction: If larger than 0.05 mm, replace it.



• Measure the deflection of the crank shaft.
∴ If larger than 0.10 mm, replace it.



o Assemble the crankcase referring to the service manual.

～Cylinder Installation Procedures～

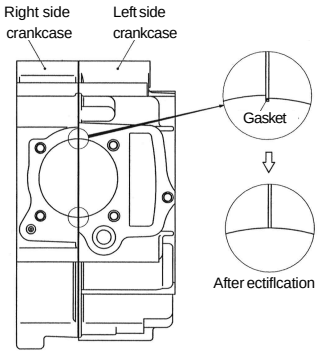
Some precautions to take in installing cylinder:

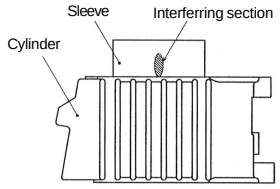
In some cases, due to right and left crankcases being out of alignment and for other reasons, in installing the cyliner, the sleeve hole on the crankcase's mating surface, circled portions, the shaded area of the cylinder sleeve, and inside of the case may interfere with one another. Since such interference will lead to sleeve deformation and cause engine troubles, do not fail to check the existence of interference and prevent the interference.

Tips on how to prevent interference

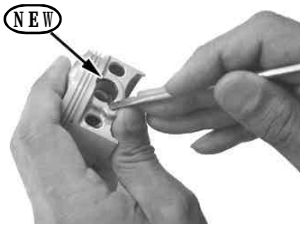
1. Cover the crankcase securely with a waste cloth so the shavings will not fall down into it.
2. Rasp the convex portions on the mating surfaces of the crankcase till the mating surfaces become level with each other.
3. After rasping the convex portion, remove the waste cloth with care not to let the shavings go inside the crankcase.
4. After removing the waste cloth, fill the hole on the crankcase with a clean waste cloth so the parts may not fall into the crankcase while installing the Kit.

※ It is likely that the shavings have fallen into the crankcase. So, after you have finished installing the Kit, let your motorcycle idle for a few minutes, and then replace the engine oil with the new one.

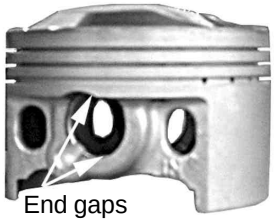




○ Attach a piston pin circlip to one of two pin holes on the piston.

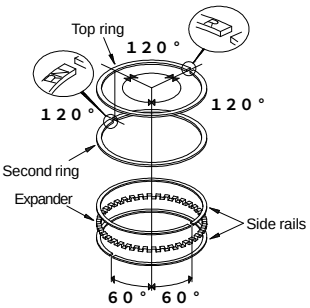


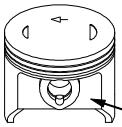
○ Attach the piston pin circlip so the ring end gap does not meet with the notch on the piston pin hole, and it should be either on the top or at the bottom of the piston as illustrated in the fig. 1 below.

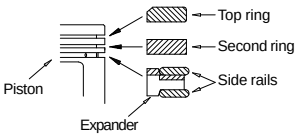


○ Air-blow the piston rings and the piston pin, and check for jamming of any foreign material by these parts.

○ Apply engine oil to grooves for piston rings, and, with reference to the figure below, fix piston rings and arrange the location of piston ring end gaps.







Pay attention to the cross section as well ! !

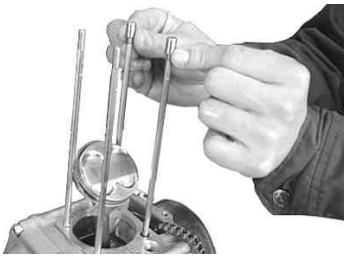
○ Apply molybdenum solution to the piston pin and the holes on the connecting rod small end.

○ Install the piston to the connecting rod so the IN mark on the piston faces the intake side.

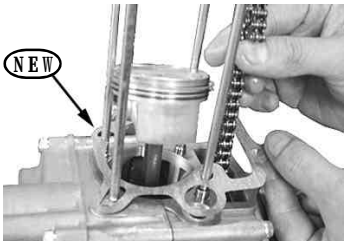
○Plug the sleeve hole and the cam chain hole on the crankcase with a clean cloth, and fix a piston pin circlip.

○Remove the cloth used to plug holes.

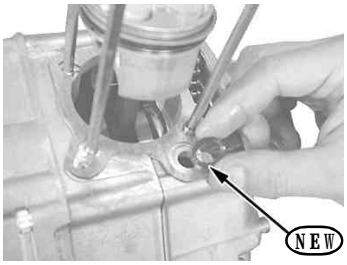
○ Degrease the cylinder base of the crankcase, and fix 8x12 dowel pins onto the dowel pin holes.



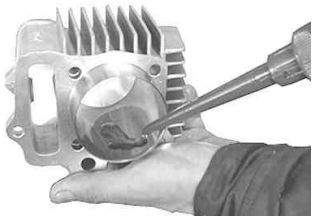
○ Fix a cylinder gasket of the kit into the cylinder base of the crankcase.



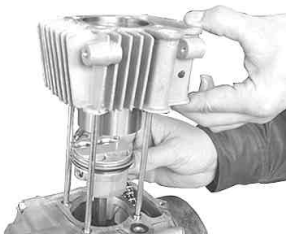
○ Fix a new rubber packing (black) of the kit onto the oil-return hole on the cylinder base of the crank case.



○ Apply engine oil to the entire inner surface of the cylinder bore.



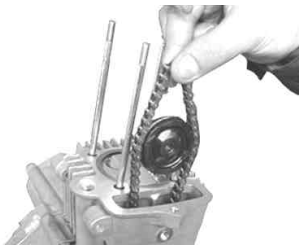
○Insert the cylinder into the stud bolts.



○ Compressing the piston rings, install the cylinder with care not to move the piston-ring end gaps out of place. Their end gaps will not be out of place.

⚠CAUTION: Be careful not to damage the piston rings.

○ Place the cam chain guide roller on the cam chains.



○ Loosely tighten the cam chain guide roller and the cylinder side bolt.

○Loosely tighten an original hex bolt which holds the crank case on the cylinder side.

○ Install the cylinder head with reference to the instruction manual.

⚠ WARNING

Since this cylinder manual is prepared for those who have acquired basic skills and knowledge in tuning, those who are technically unskilled or inexperienced are required not to do the work.

Specification List

Item No.	Bore stroke	Displacement	Compression ratio
01-04-7001	52 x 19.5	105.1 cm^3	12.0

Specification List for Cylinder & Piston

Item			Stock	Service limit	Remarks
Cylinder	Distortion		———	0.05 mm	Replace
	Internal diameter	φ52	52.015～52.070 mm	52.10 mm	Replace
Piston	External diamter (4 mm from the hem of a skirt)	φ52	51.980～52.000 mm	51.96 mm	Replace
	Internal diameter of a pin hole		13.002～13.008 mm	13.03 mm	Replace
External diameter of a piston pin			12.994～13.000 mm	12.98 mm	Replace
Piston ring end gap size		Top	0.15～0.38 mm	0.50 mm	Replace
		2nd	0.20～0.45 mm	0.50 mm	Replace
		Oil	0.20～0.70 mm	0.90 mm	Replace
Clearance between cylinder and piston			———	0.12 mm	Replace
Clearance between piston and pin			0.002～0.014 mm	0.05 mm	Replace

○Torque unit
1 kgf • m = 9.80665 N • m (=newton meter)

(MO-OIL) ○This mark shows molybdenum solution.
This solution is a mixture of molybdenum grease and engine oil (in the ratio of 1:1).
∴Apply molybdenum solution or assembly paste to the portions where it is indicated that molybdenum solution needs to be applied.

(NEW) ○This mark shows those parts to be replaced with every overhaul.
Do not fail to replace these parts every time they are overhauled.

(OIL) ○Engine oil → mark
∴Apply engine oil where so indicated.

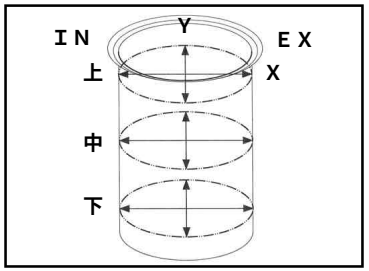
● Inspection of Cylinder

- Check the inside of cylinder for wear and damage.
- Measure the internal diameters of the cylinder bore at 6 positions; at the piston pin angle and at the right angle to it (X-Y) each at upper, middle and lower parts of the cylinder bore.

Treat the largest value as its internal diameter.

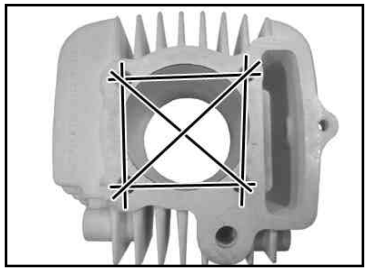
∴ If larger than 52.10mm at ϕ 52, replace it.

Calculate the clearance between a cylinder and a piston.



- Check the top surface of the cylinder for scratches and damages.
- Check the cylinder top surface for distortion with a straight edge and thickness gauge.

∴ Service limit: If the distortion is more than 0.05 mm, replace the cylinder.



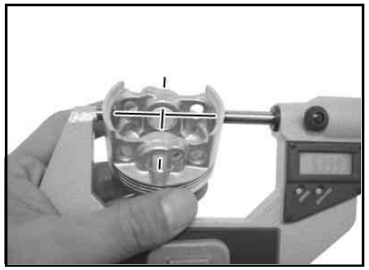
● Inspection of Piston

- Clear the piston of the remaining carbon residue.
- Fit a piston ring into the piston, and measure the clearance between the piston ring and ring groove with a thickness gauge.

∴ If larger than 0.17mm, replace it.

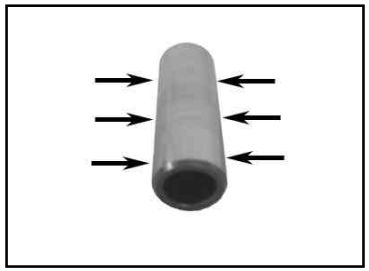
- Check the piston for damages.
- Measure the external diameter of the piston at the specified place at the bottom edge of the piston skirt at the right angle to the piston holes.

∴ If smaller than 51.96mm at ϕ 52, replace it.



•Measure the internal diameter of the piston pin hole.
∴If larger than 13.03mm, replace it.

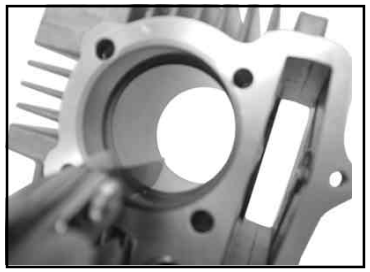
•Measure the external diameter of the piston pin.
∴Piston pin service limit : If it is below 12.98 mm, replace the piston pin.



•Calculate the clearance between the piston and the piston pin.

● Inspection of Piston Ring

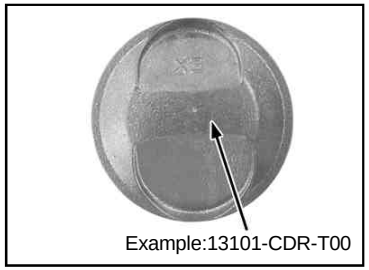
•Press down a piston ring into the piston with the piston head, and measure the clearance of the ring-end gap at the horizontal position with a thickness gauge.
∴Top and 2nd : If larger than 0.5mm, replace them.
Oil : If larger than 0.9mm, replace it.



●Supplement:

•If you intend to change the piston with a new one, you can order the one from us by the number stamped on the top of the piston.

•After removing the carbon stuck on the piston top, take a note of the No. stamped on the piston top.



•Order the piston by the No. stamped on the piston top.